THE HANFORD SITE

Tank B-109 Leak Assessment

Karthik Subramanian

Washington River Protection Solutions

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Objectives

- Review background on single-shell tank B-109
- Review tank monitoring, integrity program
- Provide technical interpretation of waste level chart in leak assessment report
- Review how we calculated total leak volume of 3,100 gallons
- Review effective mitigation already in place
- Cover additional mitigation action underway; other options and associated challenges
- Summary

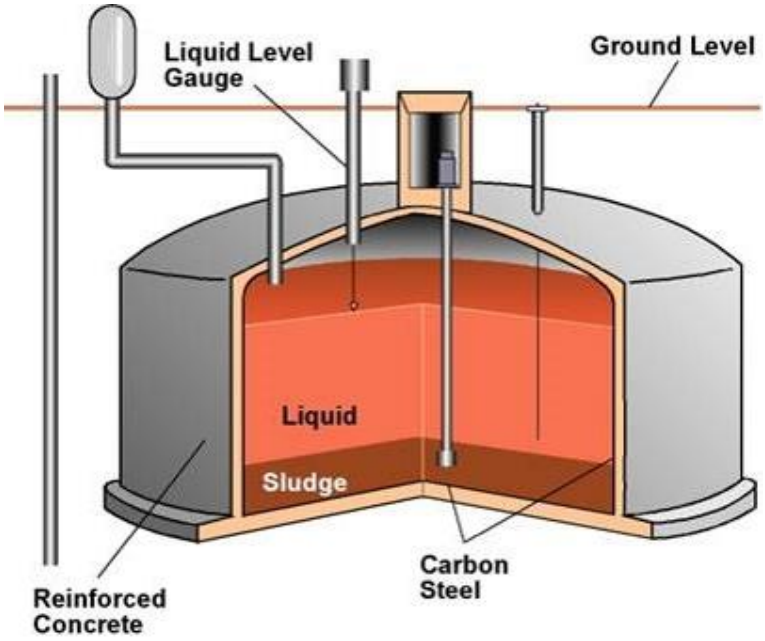
Tank B-109 Background

- 530,000-gallon underground, single-shell tank
- 1946-1976: Received contaminated liquids from operations to produce materials for U.S. nuclear weapons program
- 1985: Pumpable liquids removed as part of “Interim Stabilization” campaign for all single-shell tanks
- Today: Most of 123,000 gallons of waste is solid saltcake and sludge; relatively small amount of residual liquid
- Leak detected by waste monitoring and robust tank integrity program
- After formal leak assessment conducted, B-109 declared leaking in April 2021; estimated total of 3,100 gallons has leaked
- Leak is underground, poses no immediate safety risk to workers, public
- Leak adds very little impact to environment in area of extensive contamination from past operations in soil down to groundwater
- Effective groundwater treatment mitigation already in place

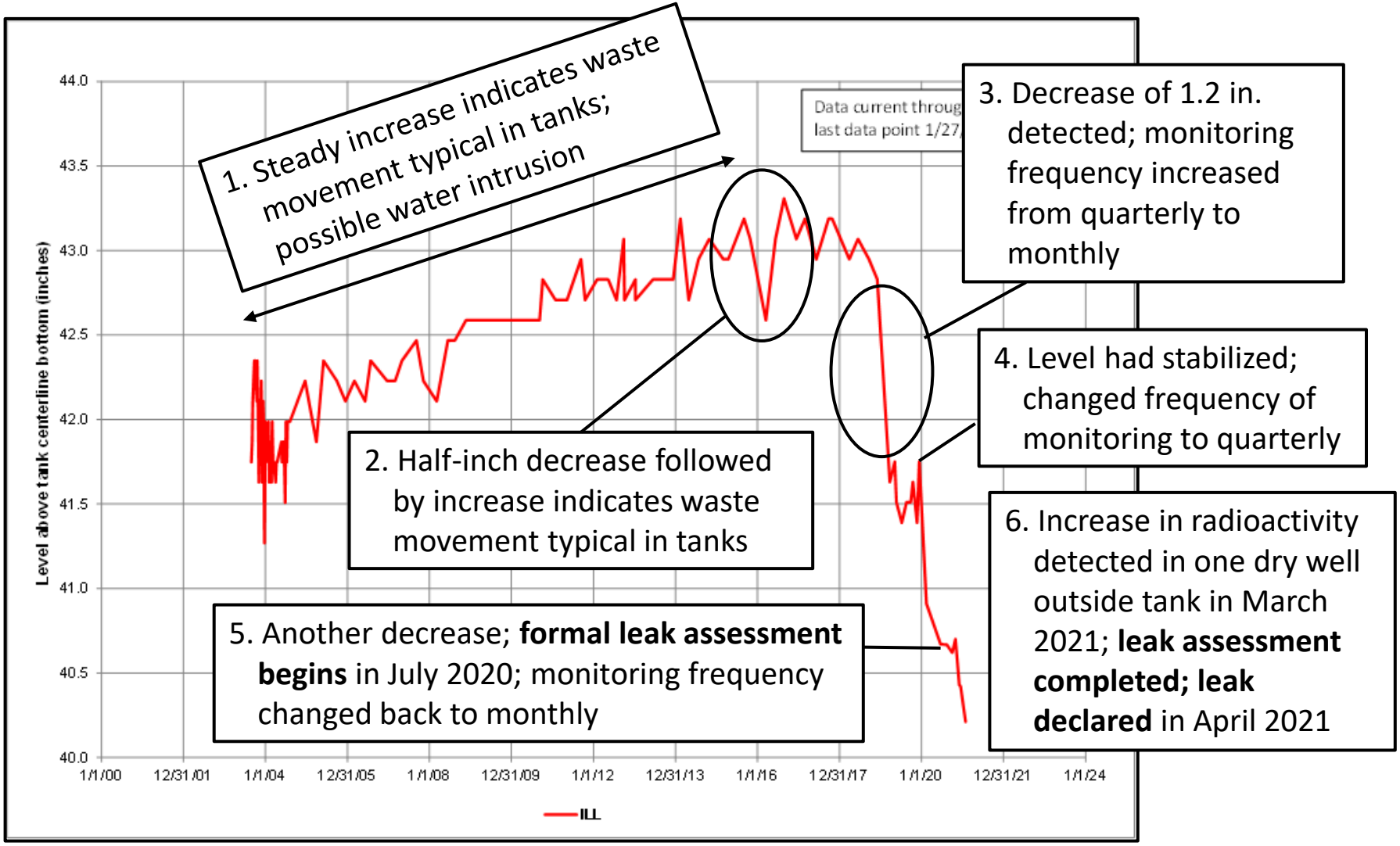
Tank Monitoring, Integrity Program

Single-Shell Tank System Leak Detection and Monitoring Functions, Requirements (*RPP-9937, Rev. 4*)

- Periodic waste level readings
  - Waste level gauges
  - Liquid observation wells (measure levels of liquid in saltcake, sludge)
- Periodic tank interior inspections using remote cameras
  - Conditions of waste surface
  - Physical integrity/condition of tank
- Limit weight load above tanks
- Periodic measurements of ground above tank for changes in elevation

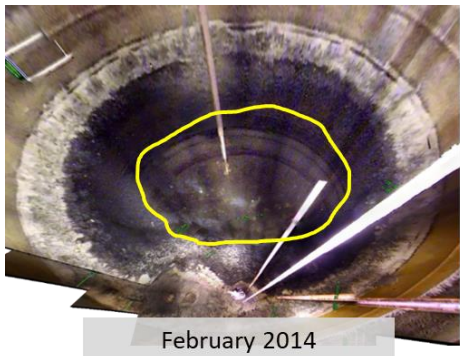


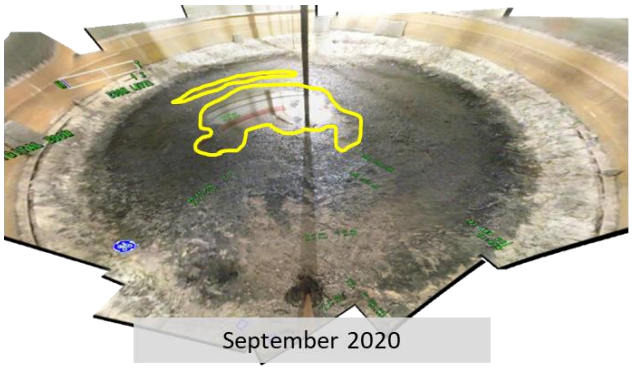
Technical Expert Interpretation of Waste Level Chart in Report



How We Estimated Total Leak Volume

- Tank dimensions
  - 75-foot diameter tank
  - 2,750 gallons per inch of increase/decrease in waste level
- B-109 solid waste is 41% sludge, 59% saltcake
- Estimate of 3,100 total gallons leaked based on calculations from visual observations and measurements of liquid level in saltcake, sludge

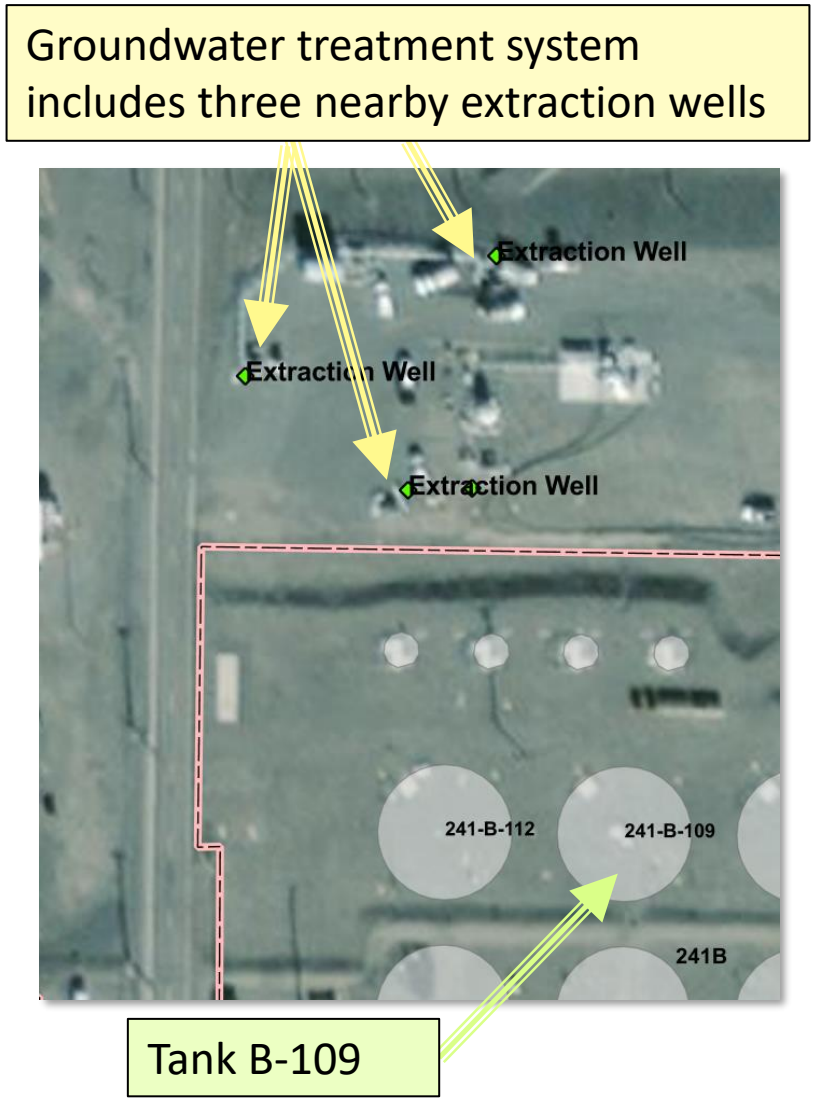

February 2014


September 2020


February 2021

Effective Mitigation Already in Place and Operating Well

- Groundwater treatment system pumping 6 million gallons/month; capturing, removing contamination
- System installed years ago to mitigate contamination under and near B Farm from past operations
  - 52 million gallons of contaminated liquids discharged to soil disposal sites
  - 360,000 gallons of contaminated liquids from past leaks from multiple tanks in B, BX, BY farms
- Estimate at least 25 years until liquid from B-109 reaches groundwater, which is 210-240 feet below the tank



Other Mitigation Options and Challenges

- Expand groundwater treatment system by adding extraction well (already underway)
- Install ventilation to evaporate liquids in tank; requires new infrastructure
- Install surface barrier to divert precipitation
- Remove pumpable liquids again; requires new infrastructure; limited effectiveness
- Retrieve and transfer waste; requires new infrastructure
- Using Test Bed Initiative equipment not viable option
- Need to balance options with commitments in Tri-Party Agreement and Consent Decree on near-term tank waste retrievals and treatment of low-activity waste

Summary

- Tank monitored in accordance with approved requirements
- Fluctuations in waste levels can be caused by multiple conditions; a decrease does not always indicate a leak
- Fluctuations indicating a potential leak initiate a comprehensive and formal leak assessment process that is technically rigorous and approved by regulators
- This approved technical process was followed for B-109
- Results, including technical interpretation of data, is available publicly in a report on www.hanford.gov
- In addition to expanding current groundwater treatment, considering other mitigation options and challenges
- Leak poses no risk to workers, public and adds very little impact to environment in area of significant contamination already being mitigated by effective groundwater treatment